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ABSTRACT

A study was conducted to determine whether the use of word processing improves both the amount and the quality of revision done by high school students. Subjects were 24 ninth grade students enrolled in a special class for interested writers, and therefore probably better than average ninth grade writers. Twelve students were assigned to an experimental group and instructed in composition using computer word processing. The remaining students did not use word processors. Students in both groups were taught skills in prewriting, draft writing, revising, and editing and were given ample opportunity to use them. Each student was assigned four compositions, which were evaluated and graded. Students could turn in as many drafts as they wanted. In each group students were assigned to revising/editing subgroups and were required to consult with them at least once before turning in any final draft. Results of the grading and evaluations indicated that word processing programs enhanced writing instruction. The group that used the word processors wrote more substantial compositions than did the other group. (Tables of data and 45 references are included.) (AEW)

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WORD PROCESSING AND COMPOSITION REVISION STRATEGIES

ED283195

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BACKGROUND AND SIGNIFICANCE

Interviews with professional writers (Crowley, 1958) and studies of writing strategies (Faigley and Witte, 1981; Monahan, 1984; Sommers, 1978; Stallard, 1974) have supported the hypothesis that the ability to revise successfully is a characteristic of good writers. Yet, revision is perhaps the "least researched, least examined, least understood, and--usually-least taught" (Murray, 1978, p. 85) aspect of the writing process. Studies of student writers have shown that they do very little voluntary revising (Emig, 1971; Mischel, 1974; Wall and Petrosky, 1980). When students do revise, especially if they are not very skilled in writing, they tend to revise superficially, concentrating their revision efforts at surface and word levels (Bridwell, 1980; Monahan, 1982; Perl, 1979). The title of an article about revision by Odell and Cohick (1975), "You mean, write it over in ink?" reflects the attitudes many students seem to have toward revising.

Recently, a number of writers and researchers have praised the editing and text moving capabilities of word processing programs and have proposed that these programs can be useful in helping students revise more readily and skillfully (Coburn, Kelman, Roberts, Synder, Watt, and Neiner, 1982; Daiute, 1982, 1983; Hennings, 1981, 1983; Monahan, 1982; Moran, 1983; Piper, 1983; H. Schwartz, 1984; M. Schwartz, 1982; Whithey, 1983). These authors have cited the computer's value in helping students revise by reducing the frustrations of recopying, by facilitating the reading of text during the various stages of the writing process, by producing neat, publishable copies from the computer printer, and by making possible the reproduction of drafts of compositions for easy sharing with teachers and peers as the writing process unfolds. Womble (1984) and Kurth and Stromberg (1985) and Kurth (1987) observed that when using word processing to write, students stayed with a piece of writing--adding, deleting, moving text--longer than they

did with paper and pencil and seemed to develop a better sense of audience. When word processing programs were used with young students for language experience stories, the students made more revisions in their stories using the computer than when the experience stories were done on paper (Barber, 1982; Bradley, 1982).

Some authors have proposed that using a word processor goes beyond simply making revising easier and actually gives the writer a whole new way of composing. The fluency that comes with the liberation from fear of errors may help writing to become the discovery process it should be (McKenzie, 1984; Olds, 1981). Suhol (1985) claims that in addition to providing a means by which a student writer can maintain authority over the text while performing guided revision, the technology of word processing also makes possible a different principle of revision which he calls the principle of addition. He explains:

> The principle of addition states simply: add first, delete last. If you feel uneasy about a word, phrases, sentene, fact, argument, or whatever, move the cursor to the right of it and produce an alternative. And another, and another, Fill the screen with alternatives if necessary. Never delete anything until you have produced alternatives. Never delete until you have judged alternatives. The principle of addition allows the text to grow and encourages the writer to exert authority and control over the available choices.

Catano (1985) states that the latest methods of teaching revision, and the theories of writing upon which they are based, have already discredited the old two-step model of composing that gave us writing followed by revision. He argues that teachers should urge students to take risks while revisng their compositions and that one way to help students risk creativity while revising is to allow them to work amidst the textual materials stored on a computer.

Some computer programs have gone beyond being "the electronic pencil" and actually prompt the students to edit various features in their papers. Computer programs like Writer's Workbench

(Macdonald, Frase, Gringrich, and Keenan, 1982) search student texts for certain errors in usage or various stylistic features. Preliminary studies have suggested that students do not resent the error-hunting aspect of such processing of their texts (Sommers, 1982) and that they carry over what they have learned about style and apply it to texts that are not run through a program (Kiefer and Smith, 1983). Spelling checkers can help students compose more freely in the first stages of their composing since they can concentrate on issues besides spelling as they compose. Spelling checkers will not find errors with homonyms, but the search and replace function of the word processor helps a writer who can identify his characteristic misspellings. The student can concentrate on one error at a time (H. Schwartz, 1984). Programs for young writers like Quill, Wandah, The Writer's Helper, The Writer's Workshop, and The Writer's Assistant provide guidance in prewriting, have a word processor, and present editing and rewriting aids (Marcus, 1984). In addition, teachers of writing have developed their own strategies and programs to help students use the power of the computer to write and revise more successfully (Newman, 1984; H. Schwartz, 1982; 1984).

Observations of students and attitude questionnaires have confirmed the motivational value of using word processing (Bean, 1983; Bradley, 1982; Daiute, 1982, 1983; Stromberg and Kurth, 1984; Kurth, 1987; Woodruff, Bereiter, and Scardamalia, 1981-82). L. Meyers and T. Rosegrant used their Talking Screen Textwriting Program to help severely language disabled students gain access to written and oral language through the use of a computer (Trachtman, 1984). Learning disabled students who had experienced great failure in learning to write responded positively to the use of word processing (Kramer, 1984). Papert (1980) cited children in his MIT computer center who went from "total rejection of writing to an intense involvement (accompanied by rapid improvement in quality) within a few weeks of beginning to write with the computer" (p. 30). Suhol (1985) notes that a room full of word processing computers not only brings writers together but it also encourages a sense of enterprise and accomplishment among the users, and that this community of

writes provides a nearly ideal setting for collaborative learning.

Although there is great interest in using word processing programs to help students develop interest and skill in revising, research in the area is still limited. Collier (1983) found that the use of a text editor increased the number and complexity of revision operations and encouraged greater manipulation of material at the word and phrase/clause level, but little whole text revision was accomplished by the students he observed. The quality of the student essays was not affected by the revision efforts of the students. However, Collier noted that the word processing system his students used was so difficult to master that much of their energy and time was devoted to learning to manipulate the word processing system itself. Sixth graders, in a study by Woodruff, Bereiter, and Scardamalia (1981-1982), perceived that the computer made writing easier, better, and more enjoyable. However, the use of word processing did not improve the quality of the written compositions. In a study involving six student writers in honors English and advanced composition courses, Harris (1985) found that her subjects liked to use word processing and planned when possible to use it for future writing tasks. They found that writing with the aid of the word processing was easier, faster, and neater. However, her research suggested that the use of word processing seemed to discourage revision, especially at the macrostructure level.

Thus the purpose of this study was to determine if the use of computer word processing would improve both the amount and quality of revision done by high school student writers.

Subjects

The subjects for this study were 24 ninth grade high school students enrolled in a special class for interested writers. Because they elected to take a writing course, it is very probable that these Subjects were more interested in writing and were better writers than average ninth grade students.

Treatment

The 24 Subjects were randomly assigned to one of two groups. Twelve students were assigned to the experimental group and were given composition instruction using computer word processing. Twelve students were randomly assigned to the control group and were given composition instruction without the use of word processing. The word processing group met on Monday and Wednesday afternoons for 60 minutes in a computer laboratory, while the non word processing group met on Tuesday and Thursday afternoons for 60 minutes in a regular classroom. Both groups met for six weeks, so each student received 12 hours of instruction. Neither group was told about the activities in the other group.

The same instructor taught both groups. The instructor was a secondary English composition teacher from another high school. She was a graduate student with a major research interest in the composing processes. She had also participated in many area writing and composition projects. She was also familiar with the word processing program used in the study.

The major focus of the instruction in both classes was expository writing. Students in both classes were taught prewriting skills, draft writing, revising and editing skills and were encouraged to use them. The teaching strategies for revision emphasized global revisions rather than surface or word level revisions. Because this class was an extra curricular activity, no high school course credit or grades were given. However, each student was assigned four compositions and these compositions were evaluated and graded. Only four assignments were given so that students would have sufficient time to revise each composition. Each student could turn in as many drafts of each composition as he/she desired. In each class students were assigned to revising and editing groups and they were encouraged to consult with these groups often. However, they were required to consult with their revising and editing group at least once before they could turn in the final draft of each composition.

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All of the instructional objectives and instructional methods were the same for the two groups. However, in the word processing group, each student had access to an IBM computer and the Word Perfect word processing software. A spelling checking program was also available for the students' use in the word processing group.

All students were encouraged to do their writing during the 60 minute class period. However, they were allowed to take compositions home to work on them if they desired. For the first class session, the word processing students were given a keyboarding practice program in order to develop some facility with keyboarding. Because of this, the word processing group received less actual composition instruction than their counterparts in the other group. All of the drafts and the final paper from four assignments were collected for analysis.

RESULTS AND DISCUSSION

Because students were assigned a certain number of specific compositions that needed to be completed, there was little variation in the number of compositions written by the two classes. All of the students in both groups completed all of the assigned writing tasks.

The number of words in the final drafts for all four composition assignments was determined. When the length of the compositions in both groups was analyzed, a significant difference was found between the two groups. The mean number of words per composition for the word processing class was 215.5 with a standard deviation of 59.0. The mean number of words per composition in the non word processing group was 193.2 with a standard deviation of 64.8.

Although the use of the word processor did affect composition length, the purpose and type of composition assignment also had a great influence on the length of the compositions. There was much variation in composition length within each group. The students who wrote longer compositions consistently wrote longer compositions on every assignment in both groups. Those students who generally wrote shorter compositions wrote short compositions for every assignment in

both groups. However, those who were in the word processing group did write significantly more words per composition even though they had to learn the word processing program first. The necessity of learning a word processing program did not appear to inhibit the amount of writing done by the students in the word processing group, and the use of the word processor did produce longer compositions. This is in direct contrast to an earlier study (Kurth, 1987) where we found no difference in composition length between word processing groups and non word processing groups.

A second objective of the study was to determine if students using word processing would do more revision than students who were not using word processing. To answer this question, the researchers counted the number of revisions which had been made between the first rough draft which had been submitted to the teacher for comments and the final paper submitted to the teacher for a grade for two of the four assignments. Every change was counted as a revision even if it was a spelling change. After the number of revisions from first draft to final draft had been determined for each assignment, those revisions which were at the phrase or sentence level were identified and counted. Finally those revisions which could be considered global in nature, i.e. affecting at least two or more sentences, were identified and counted. The results of this analysis are shown in Table 1.

Because students were taught revision techniques in the classes and were strongly encouraged to revise their compositions, students did substantial revision in both groups. However, there were no significant differences between the two groups when the papers were analyzed for number and type of revisions.

An analysis of the quality of revisions showed that, in most cases, the changes which students made were improvements in the quality of the compositions. There were a number of global revisions in which sentences or paragraphs were rearranged or placed in other positions in the papers. It may be that the ease with which sentences and paragraphs can be moved on a word processor did stimulate students to make global revisions. However, since just as many students in

the non word processing group made global revisions, the instruction in global revision given in both classes probably did more to stimulate global revisions than did the use of the word processor. Many of the word level changes involved using a more precise term for a more general term. Many of the surface and word level changes were spelling corrections. There were significantly fewer misspelled words in the word processing group than in the non word processing group. This was undoubtedly due to the fact that the students in the word processing group had access to a spelling checker.

In two instances in the non word processing group, a rough draft was redone with no changes except that it was rewritten in ink. This type of revision occurred in the word processing group also where four times a document was reprinted so that it would be double spaced.

At the end of the class, students in both groups were given an inventory which measured attitudes about writing. This instrument was a 15 item Likert scale questionnaire which attempted to measure how students felt about their writing abilities. The same instrument was used for both the word processing group and for the non word processing group. No questions on the attitude inventory dealt with the use of word processing. Two of the items were concerned with peers' abilities to help each other improve their writing. The final question on the inventory asked for a numerical rating of the quality of the writing course that the students had just completed.

When the results of the attitude inventory were analyzed, significant differences were found between the two groups. The mean for the general attitude score for the word processing group was 56.6 (s.d. =12) while the mean for the general attitude score for the non word processing group was 43.5 (s.d. =8). In general, the word processing group felt more positive about the instruction they had received, more positive about their ability to write, and more positive about editing groups than the non word processing group.

The instructor felt that the presence of the computer screens appeared to facilitate more discussion and group editing and revising because the screen provided easier access to the print.

Even though both classes were required to use editing groups, the editing groups met more formally but for shorter periods of time in the non word processing groups and more informally but for longer periods of time in the computer room. The appearance of the work on the screen seemed to help focus student attention on the writing task at hand. This did not happen in the non word processing class. The students talked with each other, but because they did not immediately focus on their work appearing on the screen, they discussed other things. The effectiveness of the computer in helping students focus on the task at hand has been noted by other researchers such as Marcus (1984) and Newman (1984).

As noted by Woodruff, Bereiter, and Scardamalia (1982); Collier (1983); and Bradley (1982), the importance of word processing as a motivational tool was apparent. This was as true for the girls in the word processing class as it was for the boys. One of the computers was connected to a large screen monitor. Students in the word procesing group were especially anxious to use this computer and have their work shown very conspicuously. The ability to produce many quality copies of their work for sharing with others also appeared to be motivational for students in the word processing group. Students appeared much more willing to read the stories of others when they were printed rather than when they were handwritten. The printer used in the study was a high speed letter quality printer. Even though the compositions in the non word processing class were xeroxed for easy access for revising groups, the quality of some of the student handwriting made editing and revising more difficult.

CONCLUSIONS

Word processing programs can be used to enhance the teaching of written composition. The results of this study show that students can learn basic word processing skills quickly with only limited practice, and that the use of word processing does have motivational value. In this study, unlike in a similar previous study (Kurth, 1987), working with word processing did increase the

length of compositions written by ninth grade students. The use of word processing can enhance the teaching of written composition. However, the most important ingredient in any composition program is a teacher who is knowledgeable about the composing processes. Instruction in pre writing activities, organizational methods, draft writing, revision skills, and provision for publishing student work are necessary parts of any composition instruction with or without word processing. The use of word processing cannot substitute for quality instruction in the entire writing process. However, the use of computer word processing in writing programs seems to have motivational value, may increase the amount of writing done in class, seems to facilitate group discussions about writing, and may help foster peer editing. When coupled with effective composition instruction in revision strategies, the word processor seems to be very beneficial in reducing the frustrations of the revision processes while writing. The use of word processing makes mechnical revisions easier and seems to foster the formation of group editing.

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Table 1

NUMBER AND TYPES OF REVISIONS MADE IN COMPOSITION ASSIGNMENTS

Assignment Two 12 papers

	# of revisions	# of sentence or phrase revisions	# of global revisions
Group			
Word Processing	49	12	6
Without Word Processing	55	10	6

Assignment Four 12 papers

	# of revisions	# of sentence or phrase revisions	# of global revisions
Group			
With Word Processing	91	27	17
Without Word Processing	83	46	10

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